

Algebra 1 CP Midterm Review

Name: Key

Date: _____ Period: _____

Simplify.

$$\begin{aligned} 1.) & -4 - (2^2 - 5)^3 + 8 \\ & -4 - (4 - 5)^3 + 8 \\ & -4 - (-1)^3 + 8 \\ & -4 - (-1) + 8 \\ & -3 + 8 \\ & \boxed{5} \end{aligned}$$

$$3.) \frac{42 \div 6 \cdot 2}{8 \times 2 \div 2}$$

$$\frac{7 \cdot 2}{16 \div 2}$$

$$\frac{14}{8} = \boxed{\frac{7}{4}}$$

$$5.) -3(5 \cdot 2 - 8)^2 + 10$$

$$-3(10 - 8)^2 + 10$$

$$-3(2)^2 + 10$$

$$-3(4) + 10$$

$$-12 + 10$$

$$\boxed{-2}$$

$$7.) 5|1 - 6 + 4| - |-3|$$

$$5|-1| - |-3|$$

$$5(1) - (3)$$

$$5 - 3$$

$$\boxed{2}$$

$$2.) 24 - \frac{3^3 - (10 + 16)}{4 \div 4}$$

$$24 - \frac{27 - (26)}{1}$$

$$24 - 1$$

$$\boxed{23}$$

$$4.) \frac{(-3 - 1)^2 + 3 \div 3}{-16 \cdot 2 \div 8}$$

$$\frac{(-4)^2 + 3 \div 3}{-32 \div 8}$$

$$\frac{16 + 1}{-4} = \boxed{\frac{17}{-4}}$$

$$6.) |3 - 21| + |7|$$

$$|-18| + 7$$

$$18 + 7$$

$$\boxed{25}$$

$$8.) -|24 \div 8 - 5| - |-6 - 2|$$

$$-|3 - 5| - |-8|$$

$$-|-2| - 8$$

$$-2 - 8$$

$$\boxed{-10}$$

$$9.) |6-12 \div 4| + 2|3-19|$$

$$|6-3| + 2|-16|$$

$$|3| + 2(16)$$

$$3 + 32$$

$$\boxed{35}$$

$$10.) \frac{|-11| + (1-4)^2 - 6}{12 \div 4 - 2}$$

$$\frac{11 + (-3)^2 - 6}{3 - 2}$$

$$3 - 2$$

$$\frac{11 + 9 - 6}{1}$$

$$20 - 6 = \boxed{14}$$

Evaluate #11-15 using the given values: $x = 0$, $y = -3$, $z = 2$

$$11.) x^2 - y^2 + z^2$$

$$0^2 - (-3)^2 + 2^2$$

$$0 - 9 + 4$$

$$\boxed{-5}$$

$$12.) \frac{2y - z^2}{-3y + x}$$

$$\frac{2(-3) - 2^2}{-3(-3) + 0}$$

$$-6 - 4$$

$$9 + 0$$

$$\frac{-10}{9}$$

$$\boxed{-10/9}$$

$$13.) -x - y - z$$

$$-0 - (-3) - 2$$

$$3 - 2$$

$$\boxed{1}$$

$$14.) y^3 \div 9 - 4z$$

$$(-3)^3 \div 9 - 4(2)$$

$$-27 \div 9 - 8$$

$$-3 - 8$$

$$\boxed{-11}$$

$$15.) \frac{x - y - z^2}{-2 - y - 3x}$$

$$\frac{0 - (-3) - 2^2}{-2 - (-3) - 3(0)}$$

$$\frac{3 - 4}{-2 - (-3) - 3(0)}$$

$$\frac{-1}{1} = \boxed{-1}$$

For #16-20, list the classification subsets for each real number:

Natural Number (N)

Whole Number (W)

Integer (I)

Rational (Q)

Irrational (Ir)

Real (R)

16.) 9.6

R, Q

17.) $\sqrt{5}$

R, Ir

18.) $-\frac{5}{9}$

R, Q

19.) 4

R, Q, I, W, N

20.) 0.121212...

R, Q

For #21-24, tell which of the following properties apply:

Commutative Property of Addition

Commutative Property of Multiplication

Associative Property of Addition

Associative Property of Multiplication

Identity Property of Addition

Identity Property of Multiplication

Inverse of Addition

Inverse of Multiplication

21.) $-4 + 4 = 0$

Inverse of Addition

22.) $9 + 2 + 7 = 7 + 2 + 9$

Associative Prop. of Addition

23.) $1 = \frac{2}{3} \cdot \frac{3}{2}$

Inverse of multiplication

24.) $x + 0 = x$

Identity Prop. of Addition

Solve.

$$25.) x - 8 = 21$$

$$+8 \quad +8$$

$$\boxed{x = 29}$$

$$26.) 13 - x = 16$$

$$-13 \quad -13$$

$$\frac{-x = 3}{-1 \quad -1}$$

$$\boxed{x = -3}$$

$$27.) \frac{1}{2} + x = \frac{5}{7}$$

$$-\frac{1}{2} \quad -\frac{1}{2}$$

$$\boxed{x = 3/14}$$

$$28.) g + \frac{1}{3} = \frac{3}{5}$$

$$-\frac{1}{3} \quad -\frac{1}{3}$$

$$\boxed{g = 4/15}$$

$$29.) 2x + 3 = 7x - 2$$

$$-2x \quad -2x$$

$$3 = 5x - 2$$

$$+2 \quad +2$$

$$5 = 5x$$

$$\div 5 \quad \div 5$$

$$\boxed{1 = x}$$

$$30.) -3x - 4 = 2x + 10$$

$$+3x \quad +3x$$

$$-4 = 5x + 10$$

$$-10 \quad -10$$

$$\frac{-14}{5} = \frac{5x}{5}$$

$$\boxed{-14/5 = x}$$

$$31.) 7 - 4y = 2y + 31$$

$$+4y \quad +4y$$

$$7 = 6y + 31$$

$$-31 \quad -31$$

$$\frac{-24}{6} = \frac{6y}{6}$$

$$\boxed{-4 = y}$$

$$32.) -3z + 5 = 2z + 30$$

$$+3z \quad +3z$$

$$5 = 5z + 30$$

$$-30 \quad -30$$

$$\frac{-25}{-5} = \frac{5z}{-5}$$

$$\boxed{5 = z}$$

$$33.) -3(x - 7) = -10$$

$$-3x + 21 = -10$$

$$-21 \quad -21$$

$$\frac{-3x = -31}{-3 \quad -3}$$

$$\boxed{x = 4/3}$$

$$34.) 5(-2x + 7) = 85$$

$$-10x + 35 = 85$$

$$-35 \quad -35$$

$$\frac{-10x = 50}{-10 \quad -10}$$

$$\boxed{x = -5}$$

$$35.) 2 - 3x = -5(x - 6)$$

$$2 - 3x = -5x + 30$$

$$+3x \quad +3x$$

$$2 = -2x + 30$$

$$-30 \quad -30$$

$$\frac{-28}{-2} = \frac{-2x}{-2}$$

$$\boxed{14 = x}$$

$$37.) 5m - 3(m - 3) = 3(m + 3)$$

$$5m - 3m + 9 = 3m + 9$$

$$2m + 9 = 3m + 9$$

$$-2m \quad -2m$$

$$9 = m + 9$$

$$-9 \quad -9$$

$$\boxed{0 = m}$$

$$39.) x - 9 = -2(x - 1) - 2$$

$$x - 9 = -2x + 2 - 2$$

$$x - 9 = -2x$$

$$+2x \quad +2x$$

$$3x - 9 = 0$$

$$+9 \quad +9$$

$$3x = 9$$

$$\boxed{x = 3}$$

Solve for the indicated variable.

$$41.) A = bh, \text{ for } b$$

$$\boxed{\frac{A}{h} = b}$$

$$43.) y = mx + b, \text{ for } x$$

$$\frac{y - b}{m} = \frac{mx}{m}$$

$$\boxed{\frac{y - b}{m} = x}$$

$$36.) -4x - 3 = 5(x + 3)$$

$$-4x - 3 = 5x + 15$$

$$+4x \quad +4x$$

$$-3 = 9x + 15$$

$$-15 \quad -15$$

$$\frac{-18}{9} = \frac{9x}{9}$$

$$\boxed{-2 = x}$$

$$38.) -2m + 5(m + 3) = -2(m - 3)$$

$$-2m + 5m + 15 = -2m + 6$$

$$3m + 15 = -2m + 6$$

$$+2m \quad +2m$$

$$5m + 15 = 6$$

$$-15 \quad -15$$

$$5m = -9$$

$$\div 5 \quad \div 5$$

$$\boxed{m = -\frac{9}{5}}$$

$$40.) x + 1 = -4 - 6(x - 1)$$

$$x + 1 = -4 - 6x + 6$$

$$x + 1 = 2 - 6x$$

$$+6x \quad +6x$$

$$7x + 1 = 2$$

$$-1 \quad -1$$

$$7x = 1$$

$$\div 7 \quad \div 7$$

$$\boxed{x = \frac{1}{7}}$$

$$42.) P = 2l + 2w, \text{ for } w$$

$$-2l \quad -2l$$

$$\frac{P - 2l}{2} = \frac{2w}{2}$$

$$\boxed{\frac{P - 2l}{2} = w}$$

$$\boxed{\frac{1}{2}P - l = w}$$

$$44.) -2x + 4y = 8, \text{ for } y$$

$$+2x \quad +2x$$

$$4y = 8 + 2x$$

$$\div 4 \quad \div 4$$

$$\boxed{y = 2 + \frac{1}{2}x}$$

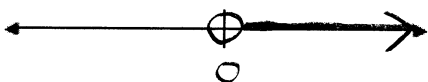
45.) $-x - y + 5 = 0$ for x

$+x$ $+x$

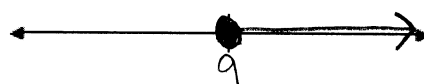
$-y + 5 = x$

Graph the following inequalities:

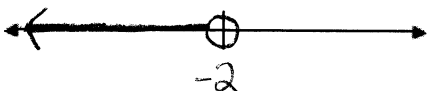
46) $x > 0$



47) $x \geq 9$



48) $x < -2$



49) $x \leq 1$



50) $-6 \leq x \leq 0$



51) $2 < x \leq 5$



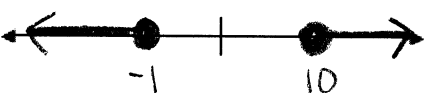
52) $-8 < x < 6$



53) $-7 \leq x \leq -4$



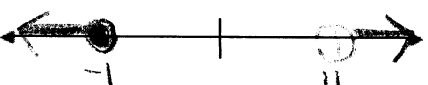
54) $x \leq -1$ OR $x \geq 10$



55) $x > -4$ AND $x < 10$



56) $x \leq -1$ OR $x > 11$



57) $x > -3$ AND $x < 10$



Solve and graph each inequality.

58.) $-4 + 2x - x > 3$

$$-4 + x > 3$$

$$+4 \quad +4$$

$$x > 7$$



60.) $-5 - \frac{x}{4} \geq -6$

$$+5 \quad +5$$

$$(-4) - \frac{x}{4} \geq -1 (-4)$$

$$x \leq 4$$



62.) $|x - 3| > 5$

$$x - 3 > 5 \quad \text{OR} \quad x - 3 < -5$$

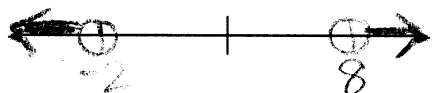
$$+3 \quad +3$$

$$+3 \quad +3$$

$$x > 8$$

or

$$x < -2$$



59.) $-5x + 3 < 6 - 4x$

$$+5x$$

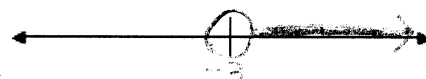
$$+5x$$

$$3 < 6 + x$$

$$-6 \quad -6$$

$$-3 < x$$

$$x > -3$$



61.) $0 \leq 2x + 4 \leq 12$

$$0 \leq 2x + 4 \quad \text{and} \quad 2x + 4 \leq 12$$

$$-4 \quad -4$$

$$-4 \quad -4$$

$$-4 \leq 2x$$

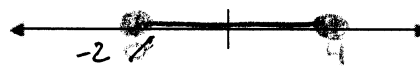
$$2x \leq 8$$

$$-2 \leq x$$

and

$$x \leq 4$$

$$-2 \leq x \leq 4$$



63.) $|x - 2| \leq 10$

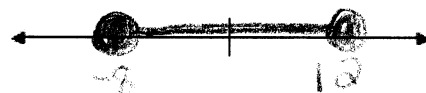
$$x - 2 \leq 10 \quad \text{and} \quad x - 2 \geq -10$$

$$+2 \quad +2$$

$$+2 \quad +2$$

$$x \leq 12 \quad \text{and} \quad x \geq -8$$

$$-8 \leq x \leq 12$$



64.) What is $-5\frac{1}{3}$ as a decimal?

$$-5\frac{1}{3} = -\frac{16}{3} = \boxed{-5.\bar{3}}$$

65.) What is 9.56 as a percent?

$$9.56 = \boxed{.0956\%}$$

66.) What is 0.56 as a fraction?

$$\frac{.56}{100} = \frac{56}{10000} = \frac{28}{5000} = \frac{14}{2500} = \frac{2}{1250} = \boxed{\frac{1}{625}}$$

67.) 2 is what percent of 40?

$$\frac{2}{40} = \frac{40}{x} \quad x = 0.05 = \boxed{5\%}$$

68.) What percent of 12 is 4?

$$12x = 4 \quad x = \frac{4}{12} = .\bar{3} = \boxed{33.\bar{3}\%}$$

69.) What is 85% of 200?

$$x = .85(200) = \boxed{170}$$

For #70-72, solve the proportions for x.

70.) $\frac{10}{15} = \frac{3}{x}$

$$45 = 10x$$

$$\boxed{4.5 = x}$$

71.) $\frac{3}{x-2} = \frac{2}{x}$

$$3x = 2(x-2)$$

$$3x = 2x - 4$$

$$-2x = -4$$

$$\boxed{x = -4}$$

72.) $\frac{x}{2} = \frac{x+4}{4}$

$$4x = 2(x+4)$$

$$4x = 2x + 8$$

$$2x = 8$$

$$x = 4$$

$$\boxed{x = 4}$$

73.) Jake can read 20 pages in 1 hour. At this rate, how many hours will it take him to read 240 pages?

$$\frac{20}{1} = \frac{240}{h} \rightarrow \frac{20h}{20} = \frac{240}{20} \rightarrow h = \boxed{12 \text{ hours}}$$

74.) State the Domain and Range of this relation and whether or not it is a function.

x	y
4	8
5	-1
6	3
4	9
8	3

Domain: $\{4, 4, 5, 6, 8\}$

Range: $\{-1, 3, 3, 8, 9\}$

Function? NO

Use the chart below to answer questions 75 and 76.

x	y
0	1
1	2
2	3
-1	4
6	5

75.) State the Domain and Range of this relation and whether or not it is a function.

Domain: $\{-1, 0, 1, 2, 6\}$

Range: $\{1, 2, 3, 4, 5\}$

Function? Yes

76.) List the ordered pairs of the relation.

$\{(0, 1), (1, 2), (2, 3), (-1, 4), (6, 5)\}$

77.) What is the slope of the line containing the given values?

x	y
1	4
2	5
3	6
4	7

$$\frac{5-4}{2-1} = \frac{1}{1} = 1$$

78.) What is the slope of the line containing the points $(-5, 6)$ and $(-5, -7)$?

$$\frac{-7-6}{-5-(-5)} = \frac{-13}{0} = \text{undefined}$$

79.) What is the slope of the line containing the points $(2, 9)$ and $(3, -9)$?

$$\frac{-9-9}{3-2} = \frac{-18}{1} = -18$$

80.) What is the slope of the line with the equation $y = -x - 12$?

$$m = -1$$

81.) What is the slope of the line with the equation $3 - 4y = 2x$?

$$m = -\frac{1}{2}$$

$$3 - 4y = 2x$$

$$-4y = 2x - 3$$

$$y = -\frac{1}{2}x + \frac{3}{4}$$

82.) What is the y-intercept of the line with the equation $-2y - 6 = \frac{x}{2}$?

$$b = -3$$

$$(0, -3)$$

$$-2y - 6 = \frac{x}{2}$$

$$-2y = \frac{x}{2} + 6$$

$$y = -\frac{1}{4}x - 3$$

83.) What is the slope and y-intercept of the line with the equation $y - 3 = -(x - 4)$?

$$m = -1$$

$$b = 7$$

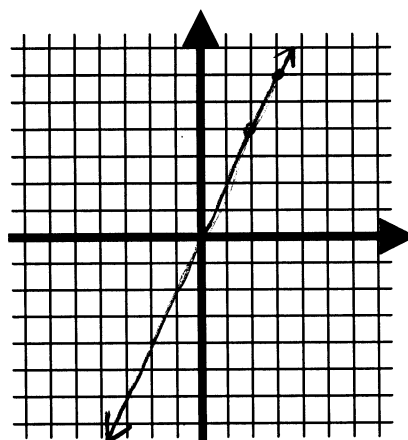
$$(0, 7)$$

$$y - 3 = -x + 4$$

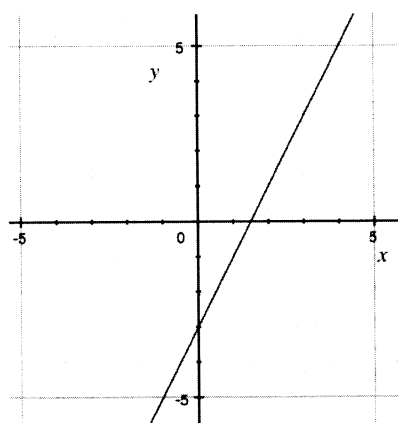
$$y = -x + 7$$

84.) Graph the line that contains the points in the chart below.

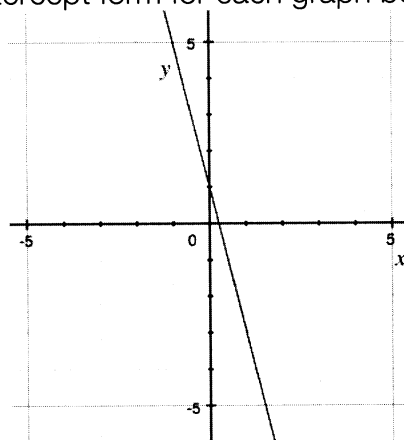
x	y
2	4
3	6
4	8
5	10



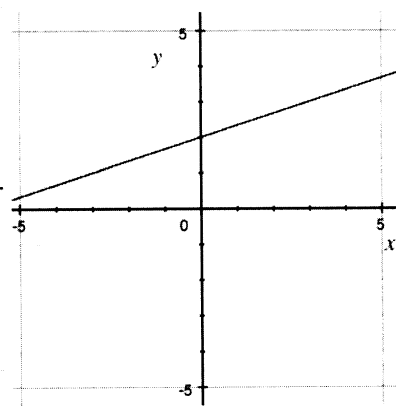
Write an equation in slope-intercept form for each graph below.



85) $y = 2x - 3$

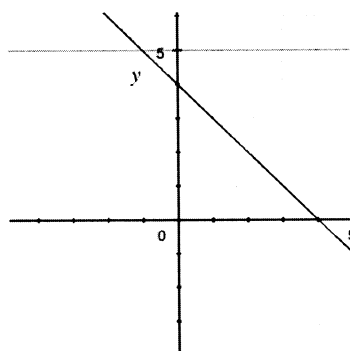


86) $y = -4x + 1$

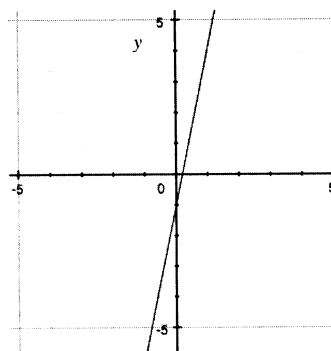


87) $y = \frac{1}{3}x + 2$

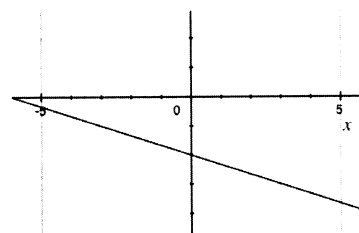
* Write an equation in standard form for each graph below.



88) $y = -x + 4$
 $x + y = 4$



89) $y = 5x - 1$
 $-5x + y = -1$



90) $y = -\frac{1}{3}x - 2$
 $\frac{1}{3}x + y = -2$

91.) Write the equation of the line parallel to $y = \frac{-x}{4} + 5$ with a y-intercept of (0, -1).

$$m = -\frac{1}{4} \quad b = -1$$

$$y = -\frac{x}{4} - 1$$

92.) Write the equation of the line perpendicular to $y = 2x - 6$ with a y-intercept of (0, 2).

$$m = -\frac{1}{2} \quad b = 2$$

$$y = -\frac{1}{2}x + 2$$